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Does reduced psychological distance increase climate engagement? On the limits of localizing climate change

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ABSTRACT

It is commonly suggested that reducing the psychological distance of climate change will increase public engagement. However, extant studies are limited by their correlational design, or by depicting impacts that vary in distance but also in kind or severity. We conducted two experiments designed to vary distance only, holding impacts constant. U.S. participants completed a visual-spatial task that portrayed the Maldives—a remote island nation facing severe climate impacts—as relatively proximal or distal, before judging the nation's geographic distance (Studies 1 and 2) and summarizing a video depicting its climate vulnerabilities (Study 2). Suggesting an effect on psychological distance, participants in the proximal condition judged the Maldives as geographically closer and described its climate impacts using more concrete (vs. abstract) language. However, this reduced psychological distance did not translate into increased policy support. Complementing other work, results suggest that localizing climate change, by itself, is unlikely to increase engagement.

1. Introduction

Although scientists warn that urgent action is needed to mitigate the impacts of climate change, public engagement continues to lag, as evidenced by the significant portion of the U.S. public that denies the issue's existence or its human causes (e.g., Dunlap, McCright, & Yarosh, 2016). To help explain this disconnect, scholars have increasingly turned to the concept of psychological distance (Liberman, Trope, & Stephan, 2007). Psychological distance refers to the distance at which objects and events are perceived to occur, a construct that has been conceptualized along four distinct dimensions—namely spatial (physically close vs. far), temporal (e.g., near vs. distant future), social (e.g., involving similar vs. dissimilar others), and uncertainty (e.g., as likely vs. unlikely to occur). It is commonly suggested that for many people, particularly those in Western industrialized nations that contribute disproportionately to climate change but are less vulnerable to its impacts, climate change is perceived as distant along all four of these dimensions (e.g., Gilbert, 2006; Weber, 2006; van der Linden, Maibach, & Leiserowitz, 2015). Psychological distance is widely assumed to represent a significant barrier to public engagement on climate change, by undermining the motivation to take actions that mitigate the problem (Gifford, 2011), leading to calls for framing climate impacts in ways that feel relevant and psychologically close to audiences (e.g., Scannell & Gifford, 2013; Schuldt, McComas, & Byrne, 2016; van der Linden et al., 2015). To date, however, evidence that reducing the psychological distance of climate change increases issue engagement is mixed.

2. The psychological distance of climate change

Suggesting that climate change is a psychologically distant phenomenon, Leiserowitz (2006) found that the most common thought or image associated with “global warming” among U.S. adults was related to melting glaciers and polar ice—impacts that are spatially distant for most Americans. Moreover, when asked about the global warming impacts that most concern them, greater percentages selected impacts on “people all over the world” (50%) or “nonhuman nature” (18%), as compared to more proximal impacts on “you and your family” (12%), “your local community” (1%), or “the United States as a whole” (9%). Similarly, in a study examining mental imagery among Australian residents,

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Leviston, Price, and Bishop (2014) found that distant associations were more common than concrete images of climate impacts (see also McDonald, 2016). Such associations may reflect, in part, the recognition that less developed nations are indeed more vulnerable to climate impacts (Millner & Dietz, 2015; Rosenzweig & Parry, 1994). For instance, in a representative survey of U.K. residents (Spence, Poortinga, & Pidgeon, 2012), respondents were more likely to agree (45.8%) than to disagree (36.1%) that climate change would disproportionately affect the world's developing countries; at the same time, however, respondents were more likely to agree (44.6%) than to disagree (32.3%) that climate change would affect people similar to themselves, suggesting complexity across the different dimensions of psychological distance.

3. Does reduced psychological distance predict increased engagement?

In recent years, numerous studies have sought to examine whether reduced psychological distance leads to greater public engagement on the issue. These studies have taken different approaches, from cross-sectional surveys to randomized experiments that test for effects of alternative messages. For instance, survey research with U.K. residents (Spence, Poortinga, Butler, & Pidgeon, 2011) has found that residents who reported direct experience with coastal flooding perceived climate as less uncertain and were more willing to restrict energy usage. Similarly, data from a national probability sample of New Zealand residents (Milfont, Evans, Sibley, Ries, & Cunningham, 2014) revealed that those living closer to the country's shoreline reported greater certainty that global warming is real and heightened support for government actions to address it. Beyond proximity to the coast, a survey of 11,000 respondents from 24 countries (Broomell, Budescu, & Por, 2015) found that personal experience with global warming predicted intentions to take specific climate-mitigation actions (e.g., using less air conditioning in the summer).

Other studies have taken an experimental approach. For instance, Scannell and Gifford (2013) randomly assigned a sample of British Columbia residents to view a poster containing information about local or global impacts from climate change; in the local condition, the message depicted impacts relevant to the participants' specific locale (e.g., about mountain pine beetle infestations in the Kootenay region), whereas in the global condition, the message focused on melting polar ice and associated sea-level rise. Suggesting an effect of proximity, the researchers observed higher scores on a self-report measure of climate change engagement in the local condition, relative to the control group. Similarly, Jones, Hine, and Marks (2017) invited Australian participants to view an approximately 4-min video that portrayed climate impacts in more proximal (i.e., occurring in Australia) or in more distal places (i.e., occurring in foreign nations, including Greece and the Philippines). Results revealed lower levels of psychological distance in the proximal video condition, a pattern that mediated increased levels of concern and heightened intentions to perform climate-mitigation behaviors.

However, other research suggests that the link between psychological distance and climate engagement is more nuanced (for a review, see McDonald, Chai, & Newell, 2015). As previously mentioned, in their nationally representative sample of U.K. residents, Spence et al. (2012) observed that climate change is perceived as more psychologically distant on some distance dimensions (e.g., spatial distance) than others (e.g., social distance), and interestingly, that perceiving greater impacts on *distant* places (i.e., developing countries) positively predicted respondents' preparedness to conserve energy to mitigate climate change. In a messaging experiment examining the influence of climate "departure dates" (i.e., the year after which the annual climate in a given location will be warmer than any year on record; see Mora et al., 2013), Rickard, Yang, and Schuldt (2016) found that neither increased spatial nor temporal proximity, by themselves, positively affected policy support. Instead, suggesting a moderation effect, results varied by political orientation—for example, U.S. conservatives expressed greater support for climate change policy after reading about impacts occurring nearby (i.e., in New York City vs. Singapore) but in the more distant future (i.e., in 2066 vs. in 2047 or 2020). In a recent study examining the role of psychological distance in response to portrayals of human versus non-human climate change victims, Manning et al. (2018) report little evidence that psychological distance increases behavioral intentions on either self-report or implicit measures.

To explain such mixed findings, Brügger, Dessai, Devine-Wright, Morton, and Pidgeon (2015) have recently argued that construal level theory (Trope & Liberman, 2010)—a common basis for the hypothesis that reduced psychological distance will promote climate engagement—does not in fact predict that localizing climate change should automatically lead individuals to support or undertake climate-mitigating actions. Instead, the researchers point out that the theory predicts that psychological distance should influence whether relatively concrete ("low-level") considerations versus relatively abstract ("high-level") considerations come to dominate climate-related judgments and behavioral intentions (Brügger et al., 2015). Offering support for this perspective, Brügger, Morton, and Dessai (2016) asked U.K. participants read about climate impacts occurring either in the U.K. or in other parts of the world. Although results revealed no main effects of the distance variable, this variable interacted with individuals' feelings of fear (a low-level consideration) versus skepticism (a high-level consideration), such that fear dominated skepticism in predicting increased risk perception and personal intentions among participants assigned to the proximal condition, and vice versa for the distal condition.

In addition to a tendency to oversimplify construal level theory, we further suggest that many extant studies are limited by their correlational nature, or in the case of experiments, by depicting impacts that vary in distance but also in kind or severity—design features that make it difficult to isolate the unique effect of distance. For example, survey studies that examine correlations between residents' climate change concerns, behavioral intentions, and physical proximity to coastlines threatened by sea-level rise (e.g., Milfont et al., 2014; Spence et al., 2011) cannot fully rule-out the possibility that a "third variable" is causally influencing what may be, in fact, a spurious correlation (Simon, 1954); attempting to statistically control for such influences (e.g., political orientation, household income; Milfont et al., 2014) is a helpful but imperfect solution. Moreover, experimental studies that attempt to avoid the causal inference problem by employing random assignment to alternative distance treatments have, by and large, exposed participants not only to different distance treatments but also to *different impacts* (e.g., Brügger et al., 2016; Jones et al., 2017; Scannell & Gifford, 2013). Although such designs offer ecological validity by depicting real-world impacts occurring closer to or farther from the self (e.g., in a distant country vs. one's home country), they raise the possibility that differences besides

psychological distance, per se (e.g., familiarity, place attachment, perceived self or collective efficacy), may be contributing to the observed results.

3.1. The present research

The present work aims to contribute to the ongoing conversation about the role of psychological distance in climate change engagement by testing a novel procedure for influencing the psychological distance at which audiences perceive a given set of climate impacts while holding the climate impacts, themselves, constant. Specifically, we report on two experiments exploring whether exposure to "proximal" versus "distal" visual-spatial cues influence judgments of the geographic distance separating our participants and a location threatened by severe climate impacts—namely, the Republic of Maldives. As the lowest-lying country in the world, the Maldives is widely seen as a "test case" for climate impacts, with projected sealevel rise threatening to submerge the archipelago and displace its 400,000 inhabitants (Berge, Cohen, & Shenk, 2001; Carrington, 2013). In developing our procedure, we drew on psychological literature suggesting that perceptions of spatial distance are highly subjective and influenced by a range of situational factors, including goal states (Balcetis & Dunning, 2009), category boundaries (Burris & Branscombe, 2005; see also; Hirtle & Jonides, 1985), and conceptually-related incidental cues. For instance, Williams and Bargh (2008) found that participants who were primed with the concept of spatial distance by plotting relatively distal points on a Cartesian plane subsequently judged themselves as more socially distant from their family members, relative to participants primed with spatial closeness (but see also Pashler, Coburn, & Harris, 2012).

In addition, we also draw on research on construal level theory that suggests a relationship between psychological distance and level of cognitive abstraction (Fujita, Henderson, Eng, Trope, & Liberman, 2006; Trope & Liberman, 2010; for a review, see Soderberg, Callahan, Kochersberger, Amit, & Ledgerwood, 2015). Fujita et al. (2006) invited students at New York University to watch a 6-min video of two students having a conversation, which was described as occurring in a spatially proximal (the university's main campus in New York City) or distal location (Florence, Italy). Participants provided written descriptions of the video's content, which were subjected to linguistic analysis by condition-blind coders. Results revealed greater use of abstract language in the spatially distal condition, an effect that remained when accounting for key control variables, including reported level of familiarity with the stated filming location.

In light of these findings linking psychological distance and construal level, together with the recent discussion of the limits of localizing climate engagement, we pursued two hypotheses and a related research question in the present studies. First, we hypothesized that participants exposed to proximal (vs. distal) cues to distance would judge the same climate-vulnerable location as geographically closer. Second, consistent with construal level theory and experimental findings (Soderberg et al., 2015), we hypothesized that exposure to proximal (vs. distal) cues to distance would lead participants to describe the climate change impacts occurring in the Maldives in more low-level, concrete ways. Finally, as a research question, we explored whether exposure to proximal (vs. distal) visual cues to distance would lead to increased support for policies aimed at mitigating climate change, holding open the possibility that they would not, consistent with recent theoretical and empirical work highlighting the nuanced relationship between psychological distance and climate change engagement (Brügger et al., 2015, 2016).

4. Method

4.1. Participants

Participants were 491 individuals ($n = 240$ in Study 1 and $n = 251$ in Study 2) recruited from Amazon's Mechanical Turk website (www.mturk.com), a common participant pool in the social and behavioral sciences (Paolacci & Chandler, 2014), to take part in a short study about "visual materials" in exchange for a nominal payment. Participants were mostly female (59%), White (80%), and liberal leaning (53% indicated a left-of-center option on our 1 to 7 political ideology scale). Mean age was 36 years ($SD = 12$).

4.2. Experimental treatment

Participants in both studies underwent a similar procedure. After providing consent, participants were instructed to complete a series of "visual tasks," the first two of which were intended to induce different levels of psychological distance. The first task, adapted from Williams and Bargh (2008), involved locating two points on a simple Cartesian plane that were either relatively close (proximal condition) or far apart (distal condition) (see Appendix A). Participants were asked to visually locate and click each point, and were further told that the computer software would register and record their clicks. This task was intended not only to prime different levels of psychological distance but also to facilitate the second visual task, which involved locating two points on a geographic map.

Participants in both studies then completed the second task, which featured a Google Maps-style map depicting two locations—Ithaca, NY and the Maldives—connected by a straight line. As described to participants, Ithaca is home to the main campus of Cornell University (where this research was based) and provided a specific location from which to judge the distance to the Maldives, given that our participants were dispersed across the U.S.[1] On the map, Ithaca was labeled as the "starting location" and was represented by a prominent green dot, whereas the Maldives was labeled as the "ending location" and was represented by a prominent red dot. Participants were instructed to first click on the green dot, then to visually trace the line from Ithaca to the Maldives, and finally to click on the red dot. Importantly, depending on the randomly assigned condition, the map was relatively small (i.e., approximately 1500 by 600 pixels), and thus the line connecting Ithaca and the Maldives was relatively short and took less time and fewer mouse scrolls to visually trace (proximal condition); alternatively, the map was relatively large (i.e., approximately 3900 by 1600 pixels), and thus the line connecting the two locations was relatively long and took more time and additional mouse scrolls to visually trace (distal condition) (see Fig. 1).[2] This design was meant to bolster the prime delivered by the Cartesian plane task with a complementary experience of embodied motor fluency or disfluency (in the proximal vs. distal conditions, respectively), in light of evidence that embodied fluency can shape judgments and preferences in ways that are analogous to conceptual fluency effects

[1] Participants were located in 44 out of 50 U.S. states in Study 1; only Hawaii, New Mexico, North Dakota, South Carolina, Vermont, and Wyoming were not represented. Due to a programming oversight, state location was not recorded in Study 2.

[2] We measured the time (in seconds) that participants spent on each of the visual tasks and, as expected, participants spent more time on both tasks in the distal condition relative to the proximal condition, a pattern that held in both Study 1 ($M_{1st\ task} = 71.8$ vs. 51.1 and $M_{2nd\ task} = 66.8$ vs. 48.4) and Study 2 ($M_{1st\ task} = 56.3$ vs. 36.4 and $M_{2nd\ task} = 68.2$ vs. 62.0).

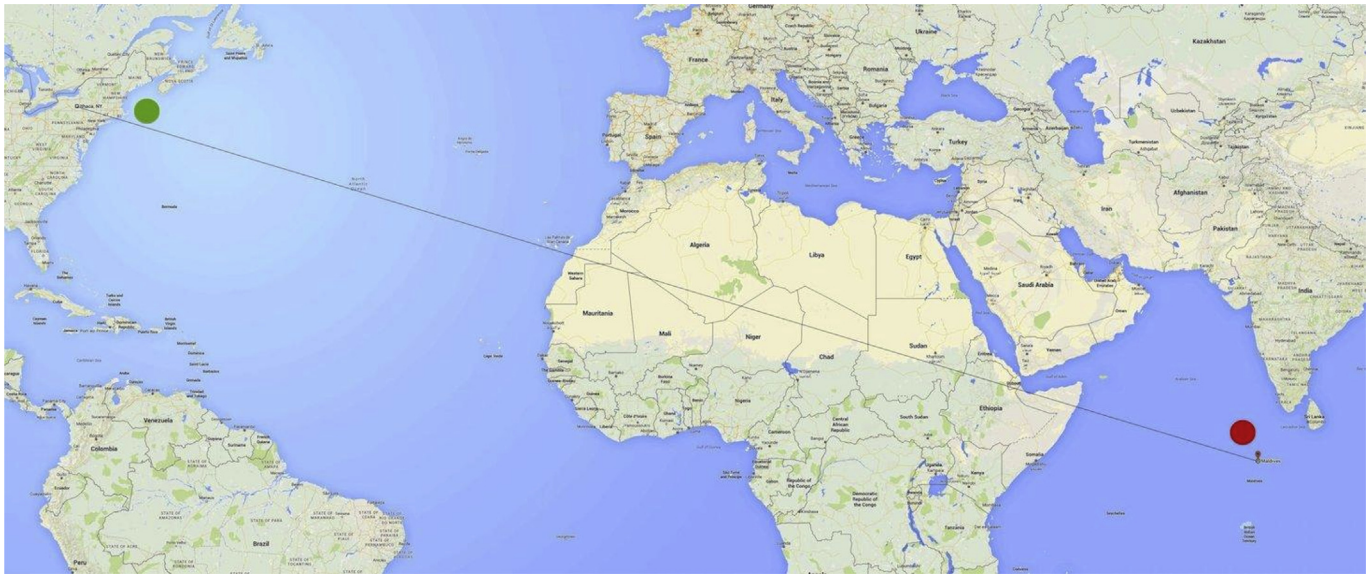


Fig. 1. Stimulus map used to represent the spatial distance between Ithaca, NY (adjacent to the green dot at left) and the Republic of Maldives (adjacent to the red dot at right). The size of this image was varied depending on treatment condition, so that the two locations were separated by a relatively shorter or longer line in the proximal versus distal conditions, respectively. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

(e.g., Cannon, Hayes, & Tipper, 2009; Casasanto & Chrysikou, 2011; Yang, Gallo, & Beilock, 2009).

4.3. Measures

Distance judgment. Immediately after completing the two visual tasks, participants were asked to judge the spatial distance separating the map's starting location (Ithaca) and ending location (the Maldives) using the following question: "How **far away** did the ending location feel from the starting location?" {1 = very close to 10 = very far} (bolding in the original). Similar closed-ended scale measures have been used in previous research to assess subjective distance perceptions (e.g., Ayduk & Kross, 2010; Peetz, Wilson, & Strahan, 2009).

Attention check. To ensure sufficient attention to the stimuli, participants then completed a multiple-choice question soliciting the "ending location" on the map they had just seen. The choice set was: New York City, Singapore, the Maldives, Dubai. Only participants who correctly identified the Maldives were retained for the analyses (12% failed the attention check), reducing the sample from the original $n = 559$ to the analytic $n = 491$ ($n = 240$ in Study 1 and $n = 251$ in Study 2).

Participants in both studies completed the treatment and measures described above. However, whereas participants in Study 1 were directed to complete the demographics questionnaire (see below) immediately after completing the attention check, participants in Study 2 completed two additional tasks before being directed to the demographics—namely, a measure of construal level and a measure of support for climate change policy.

Construal level. In addition to the measures described above, Study 2 participants watched a 4-min video introduced as depicting "impacts from climate change that are threatening the environment and people of the Maldives."[3] The video described how sea level rise related to global warming is threatening the nation's tourism industry, natural resources, and the safety of its citizens. To examine construal level of the depicted climate impacts, participants were then asked the following open-ended question: "If you were to describe the video you watched just now to a friend or family member, what would you say? Please describe the video in your own words." We submitted participants' written responses to two independent, condition-blind coders who classified the responses as reflecting predominately *concrete* thinking, predominately *abstract* thinking, or a *mix* of abstract and concrete thinking (see Table 1 for examples). We adapted coding methods from past research (Updegraff, Emanuel, Suh, & Gallagher, 2010), in which a concrete thought was defined as one that reflects specific events or experiences, or "states clear and objective criteria," whereas an abstract thought was defined as one that reflects "broad descriptions and is vague, undefined, or could be judged flexibly by the participant" (p. 100). We also coded for a fourth category representing general assessments of the video itself with little to no reference to its content (e.g., "The video is great, I recommend it"); due to a small number of observations (7 in total), these were subsequently excluded from the analyses.

Policy support. Study 2 participants also completed a 12-item measure of support for climate change mitigation and adaptation policies that was adapted from past research (e.g., Dietz, Dan, & Shwom, 2007; Smith & Leiserowitz, 2014; Zahran, Brody, Grover, & Vedlitz, 2006), which allowed us to explore whether our visual priming procedure would influence this common measure of climate change engagement. The instructions read: "The following policies have been proposed to reduce the impact of climate change in cities around the world. Using the scale provided, please indicate how much YOU support or oppose these policies {1 = Strongly Oppose to 10 = Strongly Support}." Sample items included: *Regulate carbon dioxide as a pollutant*; *Require automakers to increase the fuel efficiency of cars, trucks, and SUVs to 54.5 mpg*; and *Upgrade existing infrastructure in cities to improve wind and flooding resilience* (see Appendix B for a full list of items with descriptive statistics).

Demographic variables. At the end of the study, all participants

[3] The video was a slightly edited version of a Greenpeace-produced video titled "Maldives: Island Kingdom Under Siege," which is freely available on the group's YouTube channel. References to Greenpeace were removed from the video.

Table 1
Examples of participants' written descriptions of the video depicting climate change impacts occurring in the Maldives (Study 2).

Coding Category	Example Description
Abstract	"It's a movie about how Maldives is going to suffer from global warming and they need to get their voice heard."
Mixed Concrete/Abstract	"This is an excellent example of how climate change is affecting one nation comprised of islands. They can't wait for the rest of the world to act but must take their own steps against flooding and other climate change problems."
Concrete	"The video was about Kooddoo, an island in the Maldives that is struggling with the effects of climate change, especially global sea level rising. The country is so low that the rising sea level threatens their infrastructure. Their finances are also under threat, since the sea life that provides much of their income is threatened by rising water temperatures."

(in both Study 1 and Study 2) completed a short set of demographic questions related to climate change attitudes and cognitions in previous research, including age, gender, political orientation, environmental values (Dietz, Stern, & Guagnano, 1998), and racial/ethnic identification (coded as White or Non-White). We also measured familiarity with the Maldives using the item "Before today's study, how much had you heard or read about the Maldives?" accompanied by a 5-point response scale, with endpoints labeled "not at all" and "a lot." Unsurprisingly, participants reported low familiarity with the Maldives, with 79% and 67% (in Study 1 and Study 2, respectively) choosing the "not at all" or the adjacent response.

5. Results

Distance judgment. To test our hypothesis that exposure to incidental cues to "closeness" would reduce participants' subjective judgment of the distance between the U.S. and the Maldives, we conducted *t*-tests on the mean-level distance judgments by condition. Results were consistent with our hypothesis. In Study 1, distance judgments were significantly lower in the proximal condition ($M = 8.98$, $SD = 1.37$) than in the distal condition ($M = 9.50$, $SD = .89$), $t\,(238) = 3.49$, $p = .001$, $d = .45$. Replicating this effect, in Study 2, distance judgments were again significantly lower in the proximal condition ($M = 8.89$, $SD = 1.58$) than in the distal condition ($M = 9.35$, $SD = 1.15$), $t\,(249) = 2.59$, $p = .01$, $d = .27$. Thus, across both studies, results suggest that our experimental treatment was successful in reducing the perceived spatial distance that separates the U.S. and the Maldives.

Further analysis revealed that distance judgments were negatively skewed, with a majority of participants choosing the most distant response option (10 = very far). To examine the robustness of the observed effect, we also analyzed distance judgments as a binary variable, where all values ≤ 9 were recoded as 1 and values of 10 were recoded as 2. Logistic regression models indicated that the effect of condition on distance judgments remained significant, such that participants in the distal condition were more likely to choose the most extreme response (10 = very far) in both Study 1 (70.6% vs. 52.1%) and Study 2 (63.6% vs. 50.0%), $|B|$s $> .55$, ps $< .05$, ds ~ .30.

Construal level. Due to the ordinal nature of the coding variable (ranging from more concrete to more abstract), we computed rank-order statistics in addition to percent agreement. The independent sets of codes were highly correlated (Spearman's $\rho = .83$, $p < .001$) and showed perfect agreement on 63% of cases, with a weighted kappa (k) of 0.64 indicating "substantial" agreement (Landis & Koch, 1977).[4] To test the effect on construal level hypothesized in Study 2, we conducted a multinomial logistic regression featuring the coded 3-category open-response variable. In addition, the model controlled for the aforementioned demographic variables[5] including environmental values and reported familiarity with the Maldives. Results supported our hypothesis, such that compared to the distal cue condition, responses in the proximal cue condition were relatively more likely to contain concrete (vs. abstract) descriptions of the video's content ($B = .76$, Exp $(B) = 2.14$, $p = .03$, $d = .42$). Expressed in percentage terms, whereas 35% (i.e., 41 of 116) of open-ended responses were coded as concrete in the distal condition, this figure rose to 50% (i.e., 63 of 125) in the proximal condition.[6] Moreover, compared to the distal condition, responses in the proximal condition were relatively less likely to be coded as abstract (28% vs. 36%) ($B = -.72$, Exp $(B) = .47$, $p = .03$, $d = .40$) and as containing a mix of concrete and abstract descriptions (22% vs. 28%) ($B = -.97$, Exp $(B) = .38$, $p = .02$, $d = .54$).

Policy support. Finally, to examine our research question regarding whether the hypothesized effects of visual-spatial cues on distance judgments and construal level would extend to support for climate change policy in Study 2, we first created a composite variable of policy support by averaging responses to the 12 policy items for each participant ($\alpha = .90$). Results of a model testing for the effect of condition on this composite variable revealed no significant difference between the proximal ($M = 6.79$, $SD = 1.91$) and distal conditions ($M = 6.92$, $SD = 1.70$); $t\,(244) < 1$, $p = .80$. Thus, overall, our findings complement the perspective recently advanced by Brügger et al. (2015, 2016) who have argued that although distance manipulations in climate change messaging may be theoretically expected to influence psychological distance and the construal level of depicted impacts, they should not be expected to uniformly bolster climate engagement outcomes such as support for mitigation policy.

6. Discussion and conclusion

The psychological distance of climate change has captured the attention of many scholars as a formidable impediment to climate action, inviting inquiry into the conditions that may enable distant and abstract threats to be perceived as more proximal and concrete. The present work complements recent efforts in this area by investigating whether impacts occurring at great spatial distance can be made to feel closer and less abstract (more concrete) through situational cues that prime the concept of "closeness," and whether such effects extend to downstream variables such as support for climate change mitigation and

[4] Assessment of inter-rater agreement was based on a randomly chosen subset of 48 cases (out of 273, 18%).

[5] Due to limited n in several categories, racial/ethnic identification was coded as a binary variable (White/Non-White) for analytic purposes.

[6] The effect of condition on construal of open-ended responses remained significant when control variables were excluded from the model, $B = .61$, Exp $(B) = 1.84$, $p < .05$, $d = .34$.

adaptation policy. In addition, addressing a limitation in prior experimental work, the present study sought to control for the nature of the climate change impacts themselves by depicting the *same* impacts across conditions, varying only the situational cues to distance.

Participants judged a faraway place facing severe climate impacts—the Republic of Maldives—as spatially closer when they were exposed to situational cues that were designed to prime the concept of "closeness," an effect that replicated across independent samples of participants (Study 1 and Study 2). Moreover, suggesting that these situational distance cues can impact psychological construal level in theory-consistent ways, open-response coding suggested that participants in the proximal cue condition construed climate impacts occurring in the Maldives in more concrete (vs. abstract) terms, relative to participants in the distal cue condition. Finally, and importantly, the observed effects on subjective distance judgments and construal of climate impacts did not emerge on a common measure of support for climate change mitigation and adaptation policy, thus complementing recent work arguing that distance manipulations in climate change messaging, in and of themselves, should not be expected to uniformly increase support and action for addressing climate change (Brügger et al., 2015, 2016).

This work is not without limitations. First, it should be noted that the observed experimental effects are small. For instance, the effect of proximal versus distal cues on distance judgments corresponds to roughly half a point on a 10-point response scale; moreover, responses are concentrated on the upper end of the scale (with means ranging from 8.89 to 9.50 across the two studies), suggesting that the Maldives was perceived as highly distant regardless of condition, consistent with the actual distance separating the U.S. and the Maldives.[7] Future work may examine how the distance cues explored here shape responses to climate impacts occurring at a more moderate distance, which may be expected to give rise to greater variability in subjective distance perceptions. In addition, although the inter-rater agreement demonstrated by our coders ($k = .64$) constitutes substantial agreement according to some recommendations (Landis & Koch, 1977), the coders nevertheless arrived at different judgments more than 30% of the time, suggesting that the coding results should be interpreted with caution. Additionally, because it is difficult to interpret the *absence* of an experimental effect, the non-effect of distance cues on policy support should also be interpreted with caution; an alternative measure that focused specifically on support for helping the people and environment of the Maldives, as compared to support for carbon and energy regulations more generally (as was used here), may have performed differently. Moreover, as effects on psychological distance but not policy support or other engagement metrics may be of limited practical significance, future research should examine whether these cues lead audiences to orient toward more low-level versus high-level considerations (e.g., feasibility vs. desirability; Liberman & Trope, 1998) when deciding whether and how to engage on the issue of climate change. Lastly, it should be noted that because our participants were recruited via the Internet and undoubtedly completed the study on a range of devices, we were unable to hold constant many visual elements of the treatments (e.g., screen size and resolution). However, we expect any statistical noise introduced by these differences to be randomly distributed across conditions.

Overall, the present work suggests that beyond the content of climate change messaging, the psychological distance that audiences feel toward a location experiencing severe climate impacts may be influenced by subtle situational cues to distance within the broader messaging environment. Despite reducing psychological distance, however, this effect did not translate into heightened support for climate change mitigation and adaptation policy. This work contributes to ongoing discussions regarding the role of psychological distance as a potential barrier to public engagement on climate change (Gifford, 2011; Spence et al., 2012) by suggesting that scholars and practitioners alike should bear in mind the likely limits of localizing and recognize that making climate change impacts feel closer to the self is unlikely to uniformly bolster climate engagement—instead, altering psychological distance may be more likely to influence *which* type of criteria (i.e., low-level or high-level considerations, such as desirability or feasibility) ultimately come to dominate decisions about whether and how to engage (Brügger et al., 2015, 2016). At the same time, by attending to subtle situational influences beyond those embedded within the content of messaging, the field may be positioned to better understand the broader set of factors that shape how audiences respond to depictions of climate change impacts.

Acknowledgment

The authors wish to thank Peter Lin for his efforts in helping to create the visual stimuli used in these studies.

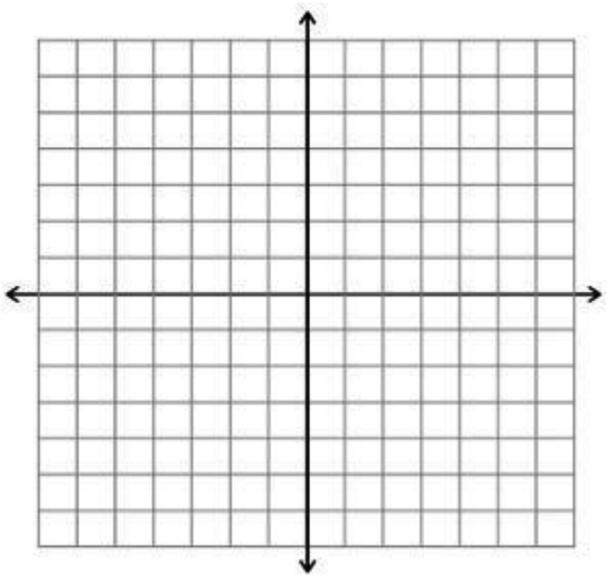
Appendix A

Instructions for the Cartesian plane task (alternative instructions appear in brackets).

Below is a grid. Please take a moment to visually locate the following two points on the graph:[(+1, +2) & (-1,−1)/(+6, +5) & (-7,−4)]

Once you have visually located the two points, please use your mouse to click on the first point and then the second point. The survey will record your clicks, even if it seems like nothing is happening.

Once you've clicked the two points, please continue.



[7] The straight line ("as the crow flies") distance from Ithaca, NY, to the Maldives is more than 8800 miles (14,200 km), which corresponds to roughly 70% of the maximum possible distance between any two points on Earth.

Appendix B

Items comprising the measure of support for climate change mitigation and adaptation policy with descriptive statistics (Study 2).

Item	M	SD
Provide government incentives for home modifications that improve energy efficiency	8.24	2.3
Require automakers to increase the fuel efficiency of cars, trucks, and SUVs to 54.5 mpg	8.18	2.44
Improve early warning systems in cities to inform residents about weather and natural hazard-related risks	8.1	2
Require electric utilities to produce at least 20% of their electricity from wind, solar, or other renewable energy sources	8.02	2.57
Upgrade existing infrastructure in cities to improve wind and flooding resilience	7.99	2.18
Regulate carbon dioxide as a pollutant	7.61	2.7
Require energy efficient home designs	7.48	2.53
Require businesses to invest in green roofs and other green infrastructure	7.17	2.79
Make flood insurance mandatory for homeowners in flood zones	6.54	2.94
Increase the cost of gasoline, heating oil, natural gas, electricity, and other energy based on fossil fuels	5.18	3.05
Increase fares for public transportation (such as buses and subways) to offset energy costs	3.93	2.85
Increase the cost of water for the average household	3.78	2.75

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